Types of Algebraic Expression

An algebraic expression is a combination of

- constants (fixed numbers)
- variables (like x, y)
- operations such as +, –, ×, ÷

Based on the number of terms, expressions are grouped into different types.

Types of Algebraic Expressions

i. Monomial

- Has only one term
- No addition or subtraction
- **Examples:** $5x$, $-3y^2$, $\frac{2a}{3}$

ii. Binomial

- Has two unlike terms
- Separated by + or –
- **Examples:** $x + 5$, $2y - 3$, $\frac{a}{2} + \frac{b}{3}$

iii. Trinomial

- Has three unlike terms
- **Examples:** $a + b + c$, $x^2 - 2x + 1$

iv. Polynomial

- Has one or more terms
- Includes monomial, binomial, trinomial, etc.
- **Examples:** $x + y + z + 1$, $3x^2 - 4x + 7$

v. Zero Polynomial

- The value is 0
- **Example:** 0

Examples with Solutions

Example: Monomial

Question: Identify and simplify: $-4x^2$

- Only one term
- It is a monomial

Example: Binomial

Question: Classify: $3a - 5b$

- Two terms: $3a$ and $-5b$
- It is a binomial

Example: Trinomial

Question: Name the expression: $x^2 + 2x + 1$

- Three terms
- It is a trinomial

Example: Polynomial

Question: Count the terms in $3x + 2y - 5z + 7$

- Four terms
- It is a polynomial

Example: Zero Polynomial

Question: What type is 0?

- It is a zero polynomial

Summary Points

- **Monomial** → 1 term (e.g., $7x$).
- **Binomial** → 2 terms (e.g., $x - 3$).
- **Trinomial** → 3 terms (e.g., $x^2 + x + 1$).
- **Polynomial** → Many terms (more than 1).
- **Zero Polynomial** → Just 0.